PROG3211 - Programming Mobile Applications II

Assignment 1: Student Grade Calculator App

Objective:

The objective of this assignment is to design and implement a single-page Android application using Kotlin and Jetpack Compose that applies ViewModel for state management and Material Theme for consistent UI styling for student grade calculation. The project should be named as 'StudentGradeStudentId' where StudentId should be replaced with your student id.

Students will demonstrate handling user input, perform real-world computations (student grade calculation), and display results in the UI. Additionally, the task will demonstrate the use of Toast messages for interactive feedback, reinforcing the integration of business logic, UI design, and Android development best practices.

Requirements:

1. **UI Layout (See image at the bottom)**
    - Create a clean UI using Material Theme.
        - The image shown below is just a sample UI layout. You should build your own material theme using material theme builder and the color scheme should be properly applied to all UI components wherever applicable as per the material design guidelines. You should not use the same material theme that was used in the practice task in the class.
        - The UI should be centered on the device screen.
    - A logo at the top. You should not use the logo used in the image. The logo should match with the background color applied for the screen in the light and dark color schemes.
    - A title 'Student Grade Calculator' below the logo.
    - Input Section:
        - TextField for Student Name. Proper hint text should be implemented.
        - TextFields for Marks in 3 Subjects (e.g., Math, Science, English). Proper hint texts should be implemented for the Text Fields. Numerical keypad should be implemented for these text fields.
        - Button labeled *Calculate Grade*
        - Button labeled *Reset*

- Result Section:
    - Should display the student's name, average marks, grade
    - Each result item should be styled with proper color scheme

2. **ViewModel Implementation**
    - Create GradeCalculatorViewModel to manage:
        - State variables for name, subject marks, and list of results.
        - A function calculateGrade() to compute:
            - ✓ Average = (mark1 + mark2 + mark3) / 3
            - ✓ Assign Grade:
                - >= 90 - A
                - 80–89 - B
                - 70–79 - C
                - < 70 - D
        - A function reset() to clear input fields and results.
3. **Toast Message**
    - All input fields should be validated.
    - Show appropriate **Toast** if the user clicks *Calculate Grade* without entering all fields.
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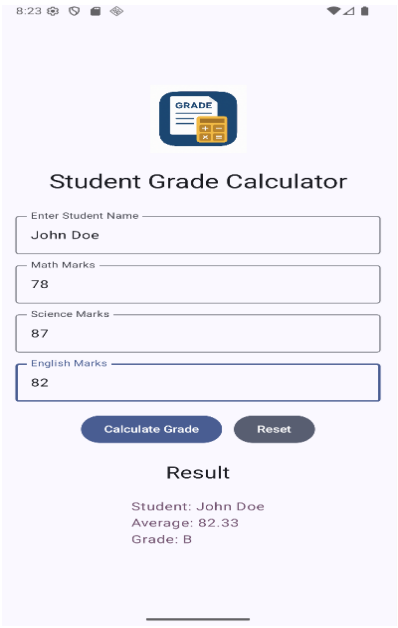
4. **Use String Resource**
    - Do not hardcode text in the UI, instead use strings.xml.

Image:



5. **Other Requirements:**
    - All best practices discussed in the class should be strictly followed.
    - For each run time errors 15% of marks will be deducted.
6. **Submission Requirements:**
    1. Source Code:
        - Zip of the complete Android project.
        - **Note:** Choose File -> Export -> Export to Zip File
    2. Documentation:
        - Include a Word document with: (Word document should be named as Assignment1-StudentId.docx). No other format of document will be considered for evaluation.
            1. All relevant Screenshots of the application in execution. Screenshots should include both light and dark color scheme.
            2. Complete code commented meaningfully. Code should be pasted as text. Code pasted as image will not be considered for evaluation.
    3. Application Demonstration Video:
        - Record a video demonstrating the complete functionality of your application running on the emulator.
        - The video must clearly show how each required feature works.
        - Additionally, the video should include a walkthrough of your source code, scanning through all important parts to verify meaningful implementation. Note: The video can be submitted as a link also.

Note: **The submission will not be considered for evaluation without the above 3 items uploaded with all the requirements satisfied. If any of the above items found missing, you will be awarded a grade of 0 (zero) for the assignment.**

Note: See rubrics for marking criteria.

Late Penalty	
1 day	20%
2 days	40%
More than 2 days	100%